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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,792	04/14/2006	Kazutoshi Mahama	S1459.7015US00	5139
23628 7590 10/07/2008 WOLF GREENFIELD & SACKS, P.C. 600 ATLANTIC AVENUE BOSTON, MA 02210-2206				
EXAMINER				
CHUNG, DAVID Y				
ART UNIT		PAPER NUMBER		
2871				
MAIL DATE		DELIVERY MODE		
10/07/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/575,792

Applicant(s)

MAHAMA ET AL.

Examiner

DAVID Y. CHUNG

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/ICE)
- Paper No(s)/Mail Date 14 April 2006
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1 and 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Hong et al. (US 2005/0007516) in view of Yu et al. (US 2004/0223313), Taniguchi et al. (US 2003/0086030) and Kashima et al. (US 5,093,765).

As to claim 1, Hong discloses a liquid crystal display device shown in figure 6 and a light emitting diode array shown in figure 7. Note in figure 6, the liquid crystal display panel 106, optical sheets 108, diffusion plate 110, light emitting diode array 130, and reflective sheet 112. Note in figure 7, the plurality of printed circuit boards 132 (light source blocks) and plurality of light emitting diodes 134. Hong discloses that the diffusion plate may include a film made of a transparent resin. See paragraph [0055].

Hong does not disclose that the diffusion plate 110 has light adjustment patterns. Yu discloses a conventional liquid crystal display in figure 1. Yu teaches that in order to provide more uniform light, a surface of the diffusion plate 18 can be further printed with inks to form distributed dots thereon. See paragraph [0006]. It would have been

obvious to one of ordinary skill in the art at the time of invention to form light adjustment patterns in the diffusion plate of Hong in order to provide more uniform light.

Yu does not disclose the shape of the dots. Taniguchi discloses an elliptically shaped dot in figure 11A. Taniguchi teaches that the dot is preferably elliptical in shape because this improves the dot reflectivity rate. See paragraph [0062]. It would have been obvious to one of ordinary skill in the art at the time of invention to form the light adjustment patterns having an elliptical shape because of the increased reflectivity rate.

Yu does not disclose that the ink is a light reflection ink. Kashima teaches providing a light conducting plate with a light scattering material such as a paint or printing ink that contains a pigment of high diffusion reflectance that has a higher refractive index than the material of which the light conducting plate is made. See column 4, lines 28-33. It would have been obvious to one of ordinary skill in the art at the time of invention to provide reflective ink to the diffusion plate of Hong because it was known to provide a pigment of high diffusion reflectance in order to improve light scattering, as evidenced by Kashima.

As to claim 2, Hong, Yu and Taniguchi do not explicitly disclose that the light transmission factor gradually increases from a central region toward a peripheral region. However, it was well known to do this in order to maintain a uniform distribution of light, given that the light sources were mainly distributed in a central region. It would have been obvious to one of ordinary skill in the art at the time of invention to gradually

increase the light transmission factor from a central region toward a peripheral region in order to maintain uniform light distribution.

2. Claims 3 and 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Hong et al. (US 2005/0007516) in view of Yu et al. (US 2004/0223313), Taniguchi et al. (US 2003/0086030), Kashima et al. (US 5,093,765) and Hooker et al. (US 5,477,422).

As to claim 3, Hong discloses a liquid crystal display device shown in figure 6 and a light emitting diode array shown in figure 7. Note in figure 6, the liquid crystal display panel 106, optical sheets 108, diffusion plate 110, light emitting diode array 130, and reflective sheet 112. Note in figure 7, the plurality of printed circuit boards 132 (light source blocks) and plurality of light emitting diodes 134. Hong discloses that the diffusion plate may include a film made of a transparent resin. See paragraph [0055].

Hong does not disclose that the diffusion plate 110 has light adjustment patterns. Yu discloses a conventional liquid crystal display in figure 1. Yu teaches that in order to provide more uniform light, a surface of the diffusion plate 18 can be further printed with inks to form distributed dots thereon. See paragraph [0006]. It would have been obvious to one of ordinary skill in the art at the time of invention to form light adjustment patterns in the diffusion plate of Hong in order to provide more uniform light.

Yu does not disclose the shape of the dots. Taniguchi discloses an elliptically shaped dot in figure 11A. Taniguchi teaches that the dot is preferably elliptical in shape

because this improves the dot reflectivity rate. See paragraph [0062]. It would have been obvious to one of ordinary skill in the art at the time of invention to form the light adjustment patterns having an elliptical shape because of the increased reflectivity rate.

Yu does not disclose that the ink is a light reflection ink. Kashima teaches providing a light conducting plate with a light scattering material such as a paint or printing ink that contains a pigment of high diffusion reflectance that has a higher refractive index than the material of which the light conducting plate is made. See column 4, lines 28-33. It would have been obvious to one of ordinary skill in the art at the time of invention to provide reflective ink to the diffusion plate of Hong because it was known to provide a pigment of high diffusion reflectance in order to improve light scattering, as evidenced by Kashima.

Hong does not disclose a light guide plate. However, it was common and conventional for distributing light as evidenced by Hooker. See column 1, lines 10-22. It would have been obvious to one of ordinary skill in the art at the time of invention to provide a light guide plate in the device of Hong because it was common and conventional for distributing light.

As to claim 4, Hong, Yu and Taniguchi do not explicitly disclose that the light transmission factor gradually increases from a central region toward a peripheral region. However, it was well known to do this in order to maintain a uniform distribution of light, given that the light sources were mainly distributed in a central region. It would have been obvious to one of ordinary skill in the art at the time of invention to gradually

increase the light transmission factor from a central region toward a peripheral region in order to maintain uniform light distribution.

3. Claims 5-9 rejected under 35 U.S.C. 103(a) as being unpatentable over Yu et al. (US 2004/0223313) in view of Taniguchi et al. (US 2003/0086030) and Kashima et al. (US 5,093,765).

As to claims 5 and 8, Yu discloses a conventional liquid crystal display in figure 1. Yu teaches that in order to provide more uniform light, a surface of the diffusion plate 18 can be further printed with inks to form distributed dots thereon. See paragraph [0006]. It would have been obvious to one of ordinary skill in the art at the time of invention to form light adjustment patterns in the diffusion plate of Hong in order to provide more uniform light.

Yu does not disclose the shape of the dots. Taniguchi discloses an elliptically shaped dot in figure 11A. Taniguchi teaches that the dot is preferably elliptical in shape because this improves the dot reflectivity rate. See paragraph [0062]. It would have been obvious to one of ordinary skill in the art at the time of invention to form the light adjustment patterns having an elliptical shape because of the increased reflectivity rate.

Yu does not disclose that the ink is a light reflection ink. Kashima teaches providing a light conducting plate with a light scattering material such as a paint or printing ink that contains a pigment of high diffusion reflectance that has a higher refractive index than the material of which the light conducting plate is made. See

column 4, lines 28-33. It would have been obvious to one of ordinary skill in the art at the time of invention to provide reflective ink to the diffusion plate because it was known to provide a pigment of high diffusion reflectance in order to improve light scattering, as evidenced by Kashima.

As to claim 6, Yu and Taniguchi do not explicitly disclose that the light transmission factor gradually increases from a central region toward a peripheral region. However, it was well known to do this in order to maintain a uniform distribution of light, given that the light sources were mainly distributed in a central region. It would have been obvious to one of ordinary skill in the art at the time of invention to gradually increase the light transmission factor from a central region toward a peripheral region in order to maintain uniform light distribution.

As to claim 7, Kashima teaches an ink containing a pigment of high diffusion reflectance. Therefore, it would have contained both a light shielding agent (reflecting portion) and a diffusion agent, which would have been mixed at some predetermined ratio.

As to claim 9, the dots 3 shown in figure 1 and 2 of Taniguchi appear to be in a matrix pattern.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Y. Chung whose telephone number is (571) 272-2288. The examiner can normally be reached Monday thru Friday from 8:30 am to 5:00 pm. If successive attempts to contact the examiner are unsuccessful, the examiner's supervisor David C. Nelms can be reached at (571) 272-1787.

/David Y. Chung/

Examiner, Art Unit 2871

/David Nelms/

Supervisory Patent Examiner, Art Unit 2871